Physiotherapy management of cancer-related fatigue: a survey of UK current practice

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Physiotherapy management of cancer-related fatigue: a survey of UK current practice

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Abstract
Purpose To establish physiotherapy management of cancer-related fatigue (CRF), in particular, to determine physiotherapy exercise management of CRF.
Methods All physiotherapist members of the UK Association of Chartered Physiotherapists in Oncology and Palliative Care (ACPOPC) received a questionnaire.
Results The response rate was 65% (223/341). Therapists had a mean of 6.8 years (+/−5.6) experience in oncology and/or palliative care. Seventy-eight percent of therapists recommend and/or use exercise as part of the management of CRF; 74% teach other strategies, most commonly energy-conservation techniques (79%). Therapists recommend and/or use exercise in similar frequencies with a range of cancer types, before (32%), during (53%) and following treatment (59%) and during advanced stages of the disease (68%). The most common barrier encountered by therapists in recommending and/or using exercise was related to the lack-of-exercise guidelines for patients with CRF (71%).
Conclusion Physiotherapists' management of CRF includes recommending and using exercise and teaching energy-conservation techniques. Therapists recommend and/or use exercise with a variety of cancer populations, across all stages of the disease trajectory, in particular during advanced stages of the disease. Findings show therapists feel their practice is affected by the lack of exercise guidance for the cancer population. CRF management and physiotherapy practice would benefit from further research testing the efficacy of exercise in understudied patient groups, in all stages of the disease trajectory.

Keywords Cancer · Fatigue · Exercise · Physical therapy · Survey

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Introduction

The number of individuals living with a cancer diagnosis has steadily increased in the western world due to improved treatments, rising incidence rates and prolonged life expectancy [1]. Consequently, there are an increasing number of individuals living with long-term and short-term side effects of cancer and anti-cancer treatments who require supportive care. In the UK alone it is estimated there are currently two million cancer survivors, representing approximately 3.3% of the population [2].

One of the most common side effects of cancer, receiving increased recognition, is cancer-related fatigue (CRF), now acknowledged as one of the most distressing symptoms of cancer. CRF impacts on all dimensions of quality of life [3] and is the number one cause of reduced activities of daily living [4]. It affects 70–100% of patients undergoing anti-cancer treatment and impacts on the lives of cancer survivors' months or years after treatment ends

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[5]. CRF is also extremely common in populations with persistent or advanced disease [6].

In spite of the prevalence and impact of CRF, its exact aetiology remains to be fully elucidated. Its genesis and exacerbation is, however, thought to be multi-factorial in origin, relating to the effect of the tumour and anti-cancer treatments, as well as co-morbid conditions. These include anaemia, hypothyroidism, cytokines, sleep problems, psychological factors such as anxiety and depression and loss of functional status [7–9].

Professional guidelines regarding CRF management exist, with the most comprehensive being developed by the National Comprehensive Cancer Network (NCCN). These internationally recognised guidelines recommend regular screening of all cancer patients for fatigue, and when found to be of moderate to severe intensity, a focused history and physical examination should be conducted [10]. In addition, assessment of known treatable contributing factors should be undertaken; these include pain, emotional distress, anaemia, altered nutritional status, sleep disturbance and decreased activity levels. Treatment of these factors is recognised as an initial step in managing fatigue. However, in the case were a patient does not have one of these contributing factors or continues to have moderate to severe fatigue after treatment of these factors, additional treatments should be recommended [10]. This includes non-pharmacologic interventions, of which exercise has one of the strongest evidence bases [10].

Theories surrounding CRF support the role of exercise by suggesting that fatigue is partially caused by a decline in neuromuscular efficiency resulting from metabolic and cellular mechanisms altered by cancer and its treatment [11]. Exercise alters the cycle of fatigue by improving neuromuscular efficiency [11]. To support this theory, rest is known to result in decreased functional capacity and increased fatigue [8], and recent meta-analysis data suggest exercise can be regarded as beneficial for individuals with CRF during and post-treatment [12]. In contrast to this evidence, surveys of current practice indicate rest and relaxation is the most common strategy recommended by health care professionals to manage CRF [13–16]. However, further research is required involving a range of health care professionals, as current findings are based only on the practice of nurses, doctors and radiographers.

In particular, there exists a perceived lack of clarity in the role of physiotherapy for people with cancer [17]. Physiotherapists are concerned with the rehabilitation of patients with cancer from diagnosis to end of life. CRF impacts on the functional ability and quality of life of patients, and therefore, its management should be a primary concern to physiotherapists. Consequently, evaluating and identifying physiotherapists' current knowledge and management of CRF poses an important research question for supportive care in cancer.

Assessment of therapists' screening practices regarding CRF should also be conducted, as physiotherapists are autonomous professionals, and therefore, they should individually screen their patients for CRF. Furthermore, given the acknowledged lack of guidance for clinicians in prescribing exercise to manage CRF, it would be highly informative to establish what physiotherapists believe to be clinically appropriate exercise to manage CRF. Exercise therapy is recognised as a core physiotherapeutic skill, with therapists employing a problem-orientated approach to exercise management, gathering subjective and objective patient data to formulate appropriate treatment plans for a variety of acute and chronic conditions. Therefore it would seem reasonable to suggest therapists in oncology and palliative care represent a relevant professional group to assess cancer patients for the CRF contributing factor of decreased activity levels and, where appropriate, design suitable exercise programmes to help manage fatigue.

This study aimed to outline physiotherapists' knowledge and management of CRF by surveying physiotherapists in cancer care within the UK. It was intended this work would help inform future research and practice in CRF management.

Material and methods

Setting and participants

This study was conducted at the Health and Rehabilitation Sciences Research Institute, within the University of Ulster, Northern Ireland. Potential participants included all practising physiotherapist members of the UK's 'Association of Chartered Physiotherapists in Oncology and Palliative Care' (ACPOPC). ACPOPC is a special interest group of the Chartered Society of Physiotherapy (CSP), the UK's professional body of chartered physiotherapists. The study's protocol and questionnaire were approved by the Office for Research Ethics Committee, Northern Ireland (ORECNI), and the executive board of ACPOPC in March 2007.

Study design and procedures

A cross-sectional, self-administered, postal questionnaire was developed to establish physiotherapy management of CRF. All members of ACPOPC received a questionnaire package with their quarterly ACPOPC newsletter. Each package contained a signed cover letter explaining the study, a questionnaire, a stamped self-addressed return envelope and an ACPOPC disclaimer. The disclaimer

indicated ACPOPC committee's support for the study, whilst emphasising that participation was voluntary. The cover letter was designed according to recommendations from the Total Design Method [18], and the anonymity and confidentiality of the survey was outlined to minimise the influence of social desirability [19].

The membership code of each physiotherapist was printed on the questionnaire they were issued, to allow elimination of initial responders in the event of a minimum 50% response rate not being achieved. This did not breach the anonymity of the survey design as the membership registry was not available to the research team. Five weeks after the initial send, a reminder to respond was issued via the Interactive CSP, the national website for chartered physiotherapists. A 45% response rate was achieved; therefore, a second mail-out was issued to non-responders.

Study instrument

The questionnaire contained 59 items, divided into four sections, entitled (1) Therapists' Professional Profile, (2) CRF Education, (3) CRF screening and (4) Exercise Management of CRF. Question items were drawn from previous surveys of CRF management [13–16], CRF guidelines [10] and exercise and cancer literature [20, 21]. The majority of questions were closed-choice questions. These can create false opinions if an insufficient range of alternatives is provided or if respondents are prompted into acceptable answers [22]. To minimise this bias, pre-testing with practising physiotherapists and experienced researchers and piloting with 15 members of the Irish ACPOPC was undertaken. This assisted in the development of a comprehensive range of responses. Additionally, an 'other' (please specify) option was included for unanticipated responses and a 'none of the above' or a 'don't know' option was included to avoid a forced response. For capturing therapists' opinions, a five-point semantic differentiation scale was employed. A five-point scale allows measurement of the intensity, extremity and direction of responses [22].

Statistical analyses

Data obtained was coded and entered manually into the Statistical Package for the Social Sciences for Windows, Version 11.5 (SPSS, Cary, NJ, USA; 1989–2001). Data was initially analysed using descriptive statistics including percentages, means, modes and medians. To determine differences between work settings, non-parametric statistics were used. Chi-square analysis explored relationships in nominal data and the Kruskall Wallis and Mann–Whitney tests were used with ordinal data. The level of significance was set at $p<0.05$.

Results

Respondents

There was a 65% response rate to the survey ($n=223$). Questionnaires were returned from all UK regions and results were from an experienced group of therapists given that the overall sample had been practising in physiotherapy for a mean of 20.4 years (+/−=11.0) with a mean of 6.8 years (+/−5.6) experience in oncology and/or palliative care. The majority of the sample were working in palliative care settings including hospices and community palliative care teams, while one quarter were employed in oncology settings (see Table 1).

CRF education

Results showed that undergraduate education regarding CRF was rarely received by therapists (4%), but the vast majority had received post-graduate education (86%). The most common type of education undertaken was the less formal method of self-directed learning (71%).

Opinions regarding CRF knowledge and management

Therapists' opinions regarding CRF management were sought using a five-point scale where one equalled 'Strongly disagree', and five equalled 'Strongly agree'. To the statement 'I have sufficient knowledge about CRF and its management', the median response was the neutral score of three. The middle 50% of respondents scored between two and three. With the statement 'I manage CRF effectively with the patients I treat', the median response was also three with the middle 50% of therapists ranging between two and four.

Screening for CRF

How commonly therapists screen their patients for CRF was sought using a five-point scale, were one equals

Table 1 Therapists' demographic characteristics

Variable	No. of respondents	%
Work setting ($n=223$)		
Hospice inpatients	118	53
Hospice day care	119	53
Community palliative care	76	34
Cancer centre/unit	56	25
General hospital	28	13
Community general	10	5
Oncology review clinic	4	2
Others	25	11

'Never', and five equals 'Always'. For screening upon initial and regular contact, the median scores were four and three, respectively, with the middle 50% of responses ranging between two and four for both. Between practice settings, it emerged that therapists in palliative care more frequently screened patients at initial and regular contact (median scores of four and three, respectively), compared to therapists in oncology (median scores of three and two) and general care (median scores of 1.5 and two).

Perceptions of the prevalence of CRF and its contributing factors

Therapists were asked to indicate what percentage of the patients they had treated in the past 6 months they felt had been experiencing moderate to severe CRF. Results indicated that the median score was between 60% and 70% of patients, with the middle 50% of responses ranging between 40% and 90%. Therapists were also asked to indicate what they believed were the main treatable contributing factors of CRF. This was answered using a multiple-response closed question which included all eight treatable contributing factors as outlined by the NCCN practice guidelines [10]. The most frequent factor chosen was decreased activity levels/physical fitness (47%), followed by 43% who choose all eight factors combined.

Overview of physiotherapy management of CRF

Results show current physiotherapy management of CRF has a strong focus on exercise, with 78% of respondents indicating they recommend and/or use exercise as part of the management of CRF. No significant difference in the frequency of exercise recommended and/or used was found between practice settings (Pearson Chi − square 1.862, df = 2 $p = 0.39$). Seventy-four percent of therapists also indicated that they use other strategies to manage CRF, with energy conservation techniques (79%) followed by relaxation (36%) being the most commonly employed. Results found that significantly more therapists in palliative care teach other strategies, in comparison to therapists in oncology (Mann − Whitney $U = 2541.00$ $p < 0.00$) and general care (Mann − Whitney $U = 689.00$ $p < 0.005$), e.g. breathlessness management (10%) and breathing control (12%).

Exercise management of CRF

Therapists were asked to indicate with what percentage of their patients in the last 6 months they had recommended and/or used exercise to manage CRF. Results showed the median score for the entire sample recommending and/or using exercise was between 50% and 60% of patients, with the middle 50% of therapists' responses ranging widely between 30% and 90% of patients. Only one significant difference between practice settings was found with more therapists recommending and/or using exercise in oncology when compared to general care (Mann − Whitney $U = 103.5p < 0.02$).

Therapists reported recommending and/or using exercise in similar frequencies with a range of cancer types (see Table 2). Exercise was also recommended and used by therapists across all stages of the disease trajectory, from before treatment to during advanced stages of disease (see Table 3). Results demonstrated that therapists less commonly recommended and used exercise during advanced stages of disease compared with earlier stages (see Table 3).

Type, frequency and duration of exercise

Therapists were most commonly recommending and using low-impact exercise types, such as walking, bed- and chair-based exercises, flexibility and stretching and an exercise bicycle (see Fig. 1). Approximately 50% of therapists were also recommending and using resistance exercises, while one third of therapists were recommending and using exercise classes. A significant number of therapists were also recommending Pilates, Yoga and Tai Chi.

Therapists were asked to report which exercise intensities they recommend and/or use in a multi-response closed question, in addition to identifying how commonly they used each exercise intensity on a scale were 1=rarely and 5=commonly. Comfort- or symptom-limited low-intensity exercise and low to moderate aerobic interval training were used commonly by the majority of physiotherapists (see Table 4). Therapists who did report using high-intensity continuous aerobic exercise used it rarely. Results showed that moderate-intensity continuous exercise was more fre-

Table 2 The frequency in which therapists recommend and/or use exercise with different cancer populations

Cancer populations therapists recommended and/or used exercise	No. of respondents n=175	%
Breast (all stages)	102	58
Lung (all stages)	94	54
Prostate (all stages)	93	53
Colorectal (all stages)	83	47
Haematological malignancies (all stages)	82	47
Other cancer types	81	46

Table 3 The number of therapists recommending and using exercise during different stages of the disease trajectory and the median score of how commonly exercise was recommended and used during each stage

Stages of the disease trajectory	Recommend		Median score; scale 1=rarely 5=commonly (middle 50% of responses)	Use		Median score; scale 1=rarely 5=commonly (middle 50% of responses)
	No.	%		No.	%	
Before treatment	72	32	4 (2–5)	54	24	4 (2–5)
During treatment	119	53	4 (3–5)	108	48	4 (3–4)
0–2 months post treatment	123	55	4 (3–5)	113	51	4 (3–5)
3–6 months post treatment	127	57	4 (4–5)	115	52	4 (3–5)
Greater than 6 months post treatment	131	59	4 (4–5)	119	53	4 (3–5)
Advanced/progressive disease	152	68	3 (2–4)	141	63	3 (2–4)

quently recommended and/or used by therapists in oncology settings compared to palliative care settings (Chi square 6.30 df $= 1, p < 0.01$).

The exercise duration most commonly recommended and/or used involved short bouts of exercise throughout the day, including 10 min/three times a day (41%) or 5 min/three times a day (37%). A third of therapists reported using or recommending other frequencies. Results showed that significantly more therapists in palliative care use the shorter frequency of 5 min, three times a day when compared to therapists in oncology care (Mann − Whitney U test $= 2994.00 p < 0.04$). The exercise frequency most commonly prescribed was 7 days per week (57%), followed by 5 (33%) and 3 days per week (21%).

Difficulties in using and/or recommending exercise

Over half of all therapists reported encountering a number of difficulties when recommending and/or using exercise. The most commonly identified problems were the lack of exercise guidelines for patients with CRF (71%), and patients' family and friends advising patients to rest and avoid activity (66%). These were followed by poor exercise compliance among patients (53%), limited exercise resources (51%), limited time with patients (50%) and a lack of patient referral for physiotherapy (49%). Forty two percent of therapists also indicated that other professionals advising rest was a difficulty. No significant differences between practice settings were found.

Exercise service provision

Therapists' knowledge of the exercise services currently available to their cancer patients was sought. Only two exercise services were commonly identified, including individual exercise counselling and information resources on exercise. Other exercise services available were identified by less than 20% of therapists (see Fig. 2). Relating to this, 77% of therapists agreed there is a need to improve the exercise services available to cancer patients in their area (see Table 2).

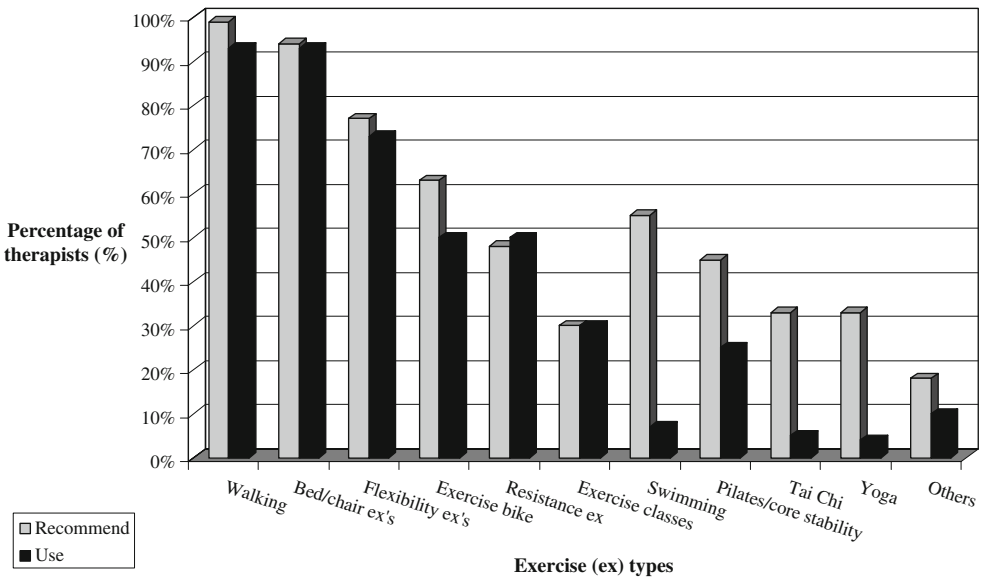

Fig. 1 The frequency of therapists recommending and using various exercise types to manage CRF (n=175)

Table 4 Exercise intensities recommended and/or used and the median score of how commonly each exercise intensity was recommended and/or used

Exercise intensities recommended and/or used	No. of respondents (n=175)	%	Median score; scale 1=rarely and 5= commonly (middle 50% of respondents)
Comfort or symptom limited intensity exercise	166	95	5 (4–5)
Low to moderate aerobic interval training	145	83	4 (3–5)
Moderate intensity continuous aerobic exercise	81	46	3 (2–3)
Resistance exercises	110	63	3 (2–3)
High intensity continuous aerobic exercise	45	26	1 (1–2)

Results also identified what exercise services therapists felt should be made available to cancer patients. Three services not commonly available were sought frequently by therapists, including supervised group programmes post treatment, community-based exercise programmes and supervised group programmes during treatment (see Fig. 2).

Discussion

This survey is the first of its kind to report on current physiotherapy practice regarding the management of CRF. Information was collected on therapists' perceptions of their management, levels of professional education undertaken and strategies employed to treat fatigue. The survey also identified physiotherapy practice regarding the exercise management of CRF, establishing any barriers therapists currently face in using and recommending exercise and reporting their views regarding the provision of exercise services for cancer patients.

Results found that physiotherapy undergraduate education regarding CRF was rare. This is understandable given that CRF has only been recognised as a major clinical problem within the last 10 to 15 years and the sample surveyed has been qualified a mean of 20 years. Encouragingly, the vast majority had some form of post-graduate education, most commonly self-directed learning. This predominance of self-directed learning over structured education may be the reason why therapists did not strongly agree they had sufficient information on CRF or were managing it effectively. Despite this, therapists importantly recognise fatigue as a common symptom among cancer patients and appreciate its multi-dimensional contributing factors. Furthermore, the majority of therapists recognise decreased activity levels as one treatable contributing factor.

The survey also identified therapists were screening their patients for fatigue; however, significant differences existed in the frequency of screening practices between settings, which may relate to greater time pressures or variation in therapists' clarity with regards to fatigue assessment and management [23]. This highlights the need for structured learning opportunities across settings, so that all patients with fatigue treatable by physiotherapy are identified.

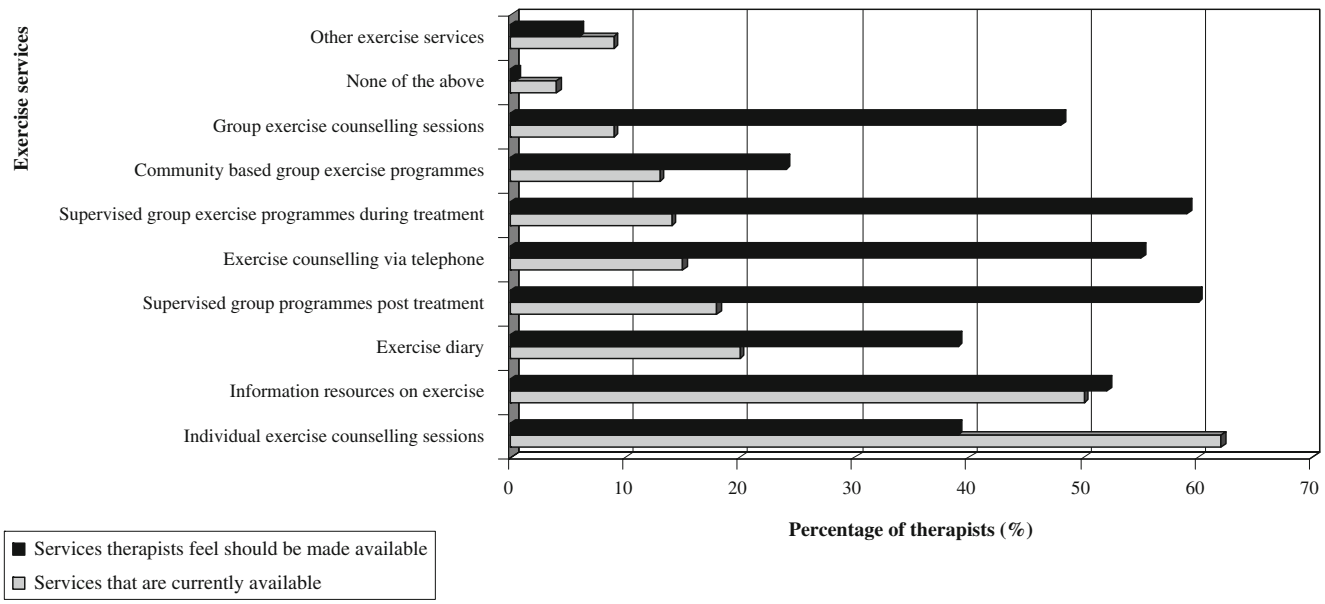

Fig. 2 Exercise service provision within therapists current settings, compared to the exercise services therapists feel should be made available to cancer patients

The majority of physiotherapists were recommending and/or using exercise to manage CRF. Energy conservation techniques including pacing and prioritising were also used by the majority of therapists. This is significantly different from previous surveys of CRF management involving other health professions where rest and relaxation was the number one strategy recommended [15, 16]. This survey may therefore represent a potential shift in CRF management across all health care professions, suggesting further research should be conducted to investigate this. In the current survey, less than 1% of physiotherapists reported recommending rest to their patients, highlighting the active role of physiotherapy in managing CRF. Furthermore, therapists were recommending and using exercise with a range of cancer populations, across all stages of the disease trajectory, in particular with patients who have advanced disease. Most work to date has investigated the benefits of exercise on fatigue in women with breast cancer with the majority of studies having been during and post treatment for early-stage disease [24–31]. Therefore, there is a need for further research investigating the effectiveness of exercise to manage CRF in a variety of cancer populations and in advanced stages of disease. In addition, physiotherapists are currently recommending and using a range of exercise prescriptions. However, practice was most commonly based on exercise suitable for individuals with low fitness levels, including functional and low-impact exercises such as walking and bed- and chair-based exercises carried out for short durations. In contrast, the majority of research to date has been based on investigating the benefits of gradual progressive moderate intensity continuous aerobic exercise, in keeping with the ACSM guidelines for healthy populations [32]. This outlines the need to test the effectiveness of other exercise prescriptions in managing fatigue, in particular those relevant to acute and palliative settings. In addition, it highlights the role of physiotherapists in providing individualised therapeutic exercise programmes for the cancer population.

Large variation in the frequency with which therapists recommend and/or use exercise with their patients was identified. This likely relates to the medical inappropriateness of exercise for patients across oncology and palliative care settings, as well as the number of barriers therapists commonly face when recommending and/or using exercise. These barriers fell into three broad categories, including patient-related, system-related and health-care-provider related [23], the latter being the most commonly identified, relating to the current lack of guidance available on prescribing exercise to manage CRF. Similar findings were reported in previous surveys involving oncologists and nurses [20, 21]. The current findings suggest that physiotherapy practice would greatly benefit from specialist training opportunities in facilitating exercise with cancer patients and further research to establish the optimal types, timing, intensity, frequency and duration of exercise across all stages of the disease trajectory.

The next most commonly identified barriers were patient-related. Therapists outlined patients' families and friends recommend rest and activity avoidance, which suggests that education for caregivers as well as patients is warranted. Patients' exercise compliance was also an issue across all settings; therefore, research into strategies to improve maintenance across the disease trajectory is essential for the effectiveness of physiotherapy practice and CRF management. System-related barriers have also been identified; these included a lack of therapist's time and a lack of exercise resources and referral to physiotherapy. Thus, promoting the role of physiotherapists in managing CRF to other health professional groups and health care commissioners, as well as research determining cost-effective methods of exercise delivery, is necessary.

Finally, the majority of therapists agreed there is a need to improve the exercise services currently available to their cancer patients. Most therapist support was shown for supervised programmes during and following treatment and programmes in community settings. Group exercise provides many benefits that can increase patients' self-efficacy to exercise, including social support, social comparison and modelling [33]. However, cancer survivors' participation in group exercise has been shown to be affected by the distance needed to travel to classes [30]. Home-based interventions remove the issue of transportation and scheduling difficulties, and are less expensive [31]; therefore, the demand for both types of exercise delivery is likely to co-exist in practice. Physiotherapists could have a role in facilitating such programmes and, therefore, would benefit from further research testing the effectiveness of these types of exercise delivery within a variety of cancer populations. In addition, results showed 62% of therapists are individually counselling their patients regarding exercise; in keeping with this, Irwin et al. highlighted that cancer survivors show a high level of interest in physical activity counselling [34]. The most effective method of delivering exercise counselling should be investigated with the aim that this could become standard practice for physiotherapists in all comprehensive cancer centres.

Limitations

The principal limitation to this study is that only members of a special interest group in oncology and palliative care were surveyed; therefore, a sampling bias does exist and findings cannot be generalised to wider physiotherapy practice. Further research should therefore seek to determine the practice and views of a greater number of

therapists working within and outside specialist cancer care settings, who are, nonetheless coming into contact with cancer patients on a regular basis. It must also be considered that social desirability may have biased responses and that the mainly closed response format of the survey may have led to different interpretations of questions between respondents [19].

Conclusion

Despite the limitations identified, this is the first study to examine the role of physiotherapists in the management of CRF. It is clear that physiotherapists perceive CRF as a common problem among the patients they treat, with management being based mainly on using and recommending exercise and teaching energy conservation techniques. Physiotherapists' use of exercise in a variety of cancer populations, across all stages of the disease trajectory, highlights the need for research testing the efficacy of exercise to manage fatigue in understudied cancer populations and, in particular, during advanced stages of disease. Finally, the barrier frequently identified by physiotherapists relating to the lack of exercise guidance highlights the need for specialist training on exercise facilitation within the cancer population, and ultimately the need for research investigating the optimal type, intensity, timing and mode of exercise to manage fatigue within the cancer population.

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Disclosures None

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